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L6: Entry 11 of 17

File: JPAB

Feb 6, 1996

PUB-NO: JP408033493A  
DOCUMENT-IDENTIFIER: JP 08033493 A  
TITLE: PRODUCTION OF L-ASPARTIC ACID

PUBN-DATE: February 6, 1996

## INVENTOR-INFORMATION:

NAME

HAYASHI, TAKAYA

MUKOYAMA, MASA HARU

SAKANO, KOICHI

## ASSIGNEE-INFORMATION:

NAME

NIPPON SHOKUBAI CO LTD

COUNTRY

N/A

APPL-NO: JP07121648

APPL-DATE: May 19, 1995

INT-CL (IPC): C12P 13/20

## ABSTRACT:

PURPOSE: To provide a process for producing L-aspartic acid on an industrial scale at a low cost, enabling the production of L-aspartic acid crystal having high purity in high recovery without discharging a waste liquid containing a large amount of ammonium salt.

CONSTITUTION: This process for the production of L-aspartic acid comprises the production of L-aspartic acid from fumaric acid and ammonia or ammonium fumarate and the collection of the produced L-aspartic acid. The fumaric acid concentration is maintained to 15-25wt.% before reaction, the reaction product is incorporated with 0.85-1.2 times mol (based on the produced L-aspartic acid) of fumaric acid after the reaction to effect the crystallization of L-aspartic acid and the mother liquor is reused after collecting the L-aspartic acid at &ge;40°C.

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Feb 6, 1996

File: JPAB

L6: Entry 12 of 17

PUB-NO: JP408033492A  
DOCUMENT-IDENTIFIER: JP 08033492 A  
TITLE: PRODUCTION OF L-ASPARTIC ACID

PUBN-DATE: February 6, 1996

INVENTOR-INFORMATION:

NAME

HAYASHI, TAKAYA  
MUKOYAMA, MASA HARU  
SAKANO, KOICHI

ASSIGNEE-INFORMATION:

NAME

NIPPON SHOKUBAI CO LTD

APPL-NO: JP07121505

APPL-DATE: May 19, 1995

INT-CL (IPC): C12P 13/20

ABSTRACT:

PURPOSE: To produce L-aspartic acid on an industrial scale in high yield at a low cost without discharging a waste liquid containing a large amount of ammonium salt by a process capable of continuing the reaction over a long period without cooling the reactor.

CONSTITUTION: This process for the production of L-aspartic acid comprises the production of L-aspartic acid from fumaric acid and ammonia or ammonium fumarate and the collection of the produced L-aspartic acid. The fumaric acid concentration is maintained to <math>\leq 13\text{wt.}\% before reaction, the reaction product is incorporated with 0.85-1.2 times mol (based on the produced L-aspartic acid) of fumaric acid after the reaction to effect the crystallization of L-aspartic acid and the mother liquor is reused after recovering the L-aspartic acid.

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L6: Entry 14 of 17

File: JPAB

Oct 12, 1993

PUB-NO: JP405260985A  
DOCUMENT-IDENTIFIER: JP 05260985 A  
TITLE: CONTINUOUS PRODUCTION OF L-ASPARTIC ACID

PUBN-DATE: October 12, 1993

## INVENTOR-INFORMATION:

NAME

TAKAHASHI, JOJI

GOTO, MAKOTO

YAMAGATA, HISASHI

TERASAWA, MASATO

YUGAWA, HIDEAKI

## ASSIGNEE-INFORMATION:

NAME

MITSUBISHI PETROCHEM CO LTD

COUNTRY

N/A

APPL-NO: JP04274343

APPL-DATE: October 13, 1992

INT-CL (IPC): C12P 13/20; C12M 1/00

## ABSTRACT:

URPOSE: To obtain L-aspartic acid in high yield by converting ammonium fumarate to L-aspartic acid in a multi-stage complete-mixing continuous reactor under specific condition in presence of a microbial strain having aspartase activity.

ITUTION: Cells of a microbial strain having aspartase activity are charged to each tank of a multi-stage complete-mixing continuous reactor and a reaction liquid is fed from an ammonium fumarate tank 1 to the 1st reaction tank. The concentration of fumaric acid at the outlet of reaction tank is controlled to 20-500 mM and the amount of fumaric acid supplied to the 2nd reaction tank. The fumaric acid concentration at the outlet of the 2nd reaction tank (b) is about 10 mM. The final product consisting of fumaric acid is transferred to a crystallization tank 13.

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Aug 18, 1999

L9: Entry 1 of 4

File: DWPI

DERWENT-ACC-NO: 1998-271748

DERWENT-WEEK: 199937

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TITLE: Production of aspartic acid condensate from  
carbohydrate(s) - by fermentation of carbohydrate, conversion  
of resulting ammonium fumarate to ammonium aspartate, and  
heating salt derived from this

INVENTOR: CAMI, P; CHATTAWAY, T; JANSEN, R J; JARRY, B;  
MAILLY, E; MORE, J; VITNER, A; EYAL, A M

PATENT-ASSIGNEE:

ASSIGNEE

AMYLUM BELGIUM NV

GODWIN E JGIUM NV

CODE

AMYLN

GODWI

PRIORITY-DATA:

1996IL-0119414

October 13, 1996

PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC

EP 935668 A1

August 18, 1999

E

000

C12P013/20

WO 9816652 A1

April 23, 1998

E

031

C12P013/20

AU 9746317 A

May 11, 1998

N/A

000

C12P013/20

DESIGNATED-STATES: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE  
ES FI GB GE GH HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU  
LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM  
TR TT UA UG US UZ VN YU ZW AT BE CH DE DK EA ES FI FR GB GH GR  
IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW

APPLICATION-DATA:

PUB-NO

APPL-DESCRIPTOR

APPL-NO

APPL-NO

EP 935668A1

October 10, 1997

1997EP-0944993

N/A

EP 935668A1

October 10, 1997

1997WO-GB02798

N/A

EP 935668A1

N/A

WO 9816652

Based on

WO 9816652A1

October 10, 1997

1997WO-GB02798

N/A

AU 9746317A

October 10, 1997

1997AU-0046317

N/A

AU 9746317A

N/A

WO 9816652

Based on

INT-CL (IPC): C12P 13/20

ABSTRACTED-PUB-NO: WO 9816652A

BASIC-ABSTRACT:

Production of aspartic acid condensate (AAC) from a carbohydrate comprises:

(a) fermenting a carbohydrate-containing medium using a microorganism which produces fumaric acid, to give a fumarate-containing fermentation liquor;

(b) forming a purified ammonium fumarate (AF) solution from the liquor;

(c) enzymatically converting the purified AF into purified ammonium aspartate;

(d) heating an aqueous solution of an aspartate salt (derived from the ammonium aspartate), so that:

(i) water is removed,

(ii) an AAC is formed and

(iii) a second product (which is basic and contains the cation of the aspartate salt) is formed, and

(e) removing and using this second product as a reagent in another step of the process.

USE - Aspartic acid is an acidic amino acid which is used in products such as aspartame sweetener and for formation of the biodegradable polymer polyaspartic acid (which is useful as a co-builder or sequestrant in detergents, or as a super-absorbent polymer).

ADVANTAGE - In the process, a salt of aspartic acid (resulting from fermentation of a carbohydrate) is condensed by water removal, without the need for purification by acidulation and crystallisation of aspartic acid. Consumption of an acidulating acid and formation of undesirable by-products are thus avoided.

The process also forms, as a by-product, a basic compound which can be used as a reagent in another step of the process. The cost of the reagents is thus lowered.

Formation of polyaspartic acid by fermentation of a carbohydrate is also cheaper than starting from fumaric acid.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: PRODUCE ASPARTIC ACID CONDENSATE CARBOHYDRATE  
FERMENTATION CARBOHYDRATE CONVERT RESULT AMMONIUM FUMARATE

## AMMONIUM ASPARTATE HEAT SALT DERIVATIVE

DERWENT-CLASS: A23 A97 B05 D13 D16 D25 E16

CPI-CODES: A01-E04; A05-F03; A05-J01A; A09-A08; A12-W12A;  
A12-W12B; B10-B02J; D03-H01A; D05-C01; D11-B06; E10-B02D5;  
E11-M;

## CHEMICAL-CODES:

Chemical Indexing M2 \*01\*

Fragmentation Code

H1 H100 H181 J0 J012 J1 J172 M280 M312 M321  
M332 M343 M349 M381 M391 M416 M620 M720 M903 M904  
M910 N161 N513 N514 Q222 Q233 Q273

Specific Compounds

00114P

Registry Numbers

0114P

Chemical Indexing M3 \*01\*

Fragmentation Code

H1 H100 H181 J0 J012 J1 J172 M280 M312 M321  
M332 M343 M349 M381 M391 M416 M620 M720 M903 M904  
M910 N161 N513 N514 Q222 Q233 Q273

Specific Compounds

00114P

Registry Numbers

0114P

UNLINKED-DERWENT-REGISTRY-NUMBERS: 0114P

## ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1] 018 ; G2073 G2062 D01 D60 F07 F35 D11 D10 D50 D84 F08 F36  
; H0271 ; L9999 L2471 ; L9999 L2039 ; L9999 L2835 Polymer Index [1.2] 018 ; ND03  
; B9999 B5094 B4977 B4740 Polymer Index [1.3] 018 ; C999 C044 C000 ; C999 C259  
Polymer Index [2.1] 018 ; G2073 G2062 D01 D60 F07 F35 D11 D10 D50 D84 F08 F36  
; H0000 ; P0635\*R F70 D01 Polymer Index [2.2] 018 ; ND04 ; B9999 B3021 B3010 ;  
Q9999 Q7045 Q7034 ; Q9999 Q9370 ; B9999 B3383\*R B3372

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1998-084733

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L9: Entry 2 of 4

File: DWPI

May 19, 1999

DERWENT-ACC-NO: 1998-130310

DERWENT-WEEK: 199924

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TITLE: Crystalline aspartic acid production for manufacture of poly-aspartic acid - by converting di:carboxylate to aspartate, acidifying with cation exchanger, recovering aspartic acid from separated solution and regenerating exchanger

INVENTOR: CAMI, P; PILON, R ; EYAL, A

## PATENT-ASSIGNEE:

ASSIGNEE

CODE

AMYLUM NV

AMYLN

STALEY MFG CO A E

STAL

WHALLEY KG CO A E

WHALI

## PRIORITY-DATA:

1996IL-0118892

July 18, 1996

## PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 915828 A1	May 19, 1999	E	000	C07C227/40
WO 9803468 A1	January 29, 1998	E	022	C07C227/40
AU 9734554 A	February 10, 1998	N/A	000	C07C227/40

DESIGNATED-STATES: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE  
ES FI GB GE GH HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV  
MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR  
TT UA UG US UZ VN YU ZW AT BE CH DE DK EA ES FI FR GB GH GR IE  
IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW

## APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-NO
EP 915828A1	July 11, 1997	1997EP-0930683	N/A
EP 915828A1	July 11, 1997	1997WO-GB01875	N/A
EP 915828A1	N/A	WO 9803468	Based on
WO 9803468A1	July 11, 1997	1997WO-GB01875	N/A
AU 9734554A	July 11, 1997	1997AU-0034554	N/A
AU 9734554A	N/A	WO 9803468	Based on

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L6: Entry 2 of 17

File: JPAB

Aug 10, 1999

PUB-NO: JP411217359A

DOCUMENT-IDENTIFIER: JP 11217359 A

TITLE: CRYSTALLIZATION OF L-ASPARTIC ACID

PUBN-DATE: August 10, 1999

## INVENTOR-INFORMATION:

NAME

MORI, YOSHIAKI

KATO, NAOKI

EIRAKU, JUNKO

COUNTRY

N/A

N/A

N/A

## ASSIGNEE-INFORMATION:

NAME

MITSUBISHI CHEMICAL CORP

COUNTRY

N/A

APPL-NO: JP10332307

APPL-DATE: November 24, 1998

INT-CL (IPC): C07C 227/42; C07C 229/24

## ABSTRACT:

PROBLEM TO BE SOLVED: To crystallize L-aspartic acid having high purity and useful as food additives, etc., in a high efficiency and reproducibility by specifying the supersaturation degree index in the precipitation of aspartic acid to a specific level.

SOLUTION: In the crystallization of L-aspartic acid from an aqueous solution of an L-aspartic acid salt in the presence of an acid precipitation agent (preferably maleic acid or fumaric acid), the supersaturation degree index

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